

APRIL/MAY 2024

**CCA53/CCS53 — DESIGN AND ANALYSIS  
OF ALGORITHMS**

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define the term — Binary tree.
2. Mention the methods of Graph representations.
3. Define the term - Divide-and-Conquer.
4. What is Quick sort?
5. What is Knapsack problem?
6. What is Optimal storage on Tape problem?
7. Define the term — Optimal Binary search tree.
8. Define Multistage Graphs.
9. What is Graph coloring problem?
10. What is LC Branch-and-Bound solution?

PART B — ( $5 \times 5 = 25$  marks)

Answer ALL the questions.

11. (a) Discuss on the basics of Priority Queues.

Or

- (b) Briefly explain the concept of Asymptotic notations.

12. (a) Explain the algorithm for finding the Maximum and Minimum.

Or

- (b) Discuss on the working of Selection sort algorithm using a numeric example.

13. (a) Describe about the method of Job sequencing with deadlines.

Or

- (b) Explain the working of Kruskal's algorithm with an example.

14. (a) Discuss on the Graph traversal techniques.

Or

- (b) Describe the algorithm for All pairs Shortest paths problem.

15. (a) Explain the algorithm to solve Sum of Subsets problem.

Or

- (b) Discuss on Hamiltonian Cycles.

PART C — ( $3 \times 10 = 30$  marks)

Answer any THREE questions.

16. Explain the organization of Stack and Queue with its operations.

17. Describe the functioning of Merge sort algorithm using a numerical example.

18. Discuss on the working of Single source Shortest path algorithm with an example.

19. Explain the Binary tree Traversal techniques using example.

20. Describe the algorithm to solve 8-Queens problem using backtracking.